



Telenor Microfinance Bank Accelerates Financial Inclusion with VMware Tanzu

Telenor Microfinance Bank is the first microfinance bank in Pakistan designed to operate as a fintech, with the aim of promoting financial inclusion. It is jointly owned by leading telecommunications company Telenor Group and Ant Group, an affiliate company of Alibaba Group that operates the world's leading payment and lifestyle platform Alipay.
<https://telenorbank.pk/>

Industry

Financial Services

Strategic priorities

- App Modernization

Partner

Premier Systems was founded in 1993 and has been providing solution that are the bedrock of system integration and ICT infrastructure to various customers in Pakistan.

<https://www.premier.com.pk/>

VMware footprint

- VMware® vSphere® with Tanzu
- VMware Tanzu™ Kubernetes Grid
- VMware Tanzu™ Observability by Wavefront
- VMware NSX-T Data Center™
- VMware Professional Services

Telenor Microfinance Bank (TMB) launched its mobile wallet Easypaisa to allow consumers to make digital payments instead of using cash. But its IT infrastructure could not support the small-ticket transactions on the application. After VMware and systems integrator Premier Systems deployed VMware vSphere with Tanzu, the bank could scale up quickly by spinning up containers in minutes instead of the days required for virtual machines. The Kubernetes-based infrastructure not only helped the bank optimize the use of compute resources, but also enabled it to adopt DevOps best practices in streamlining application development, testing and rollout. As a result, the bank could bring new innovations to market much faster.

Bringing financial inclusion to an unbanked nation

Headquartered in Karachi, TMB is one of the largest microfinance banks in Pakistan with more than 170,000 agents and touchpoints nationwide.

The bank aims to bring financial inclusion to the unbanked through traditional banking solutions and digital financial services. It started with microlending programs in 2005 and went on to pioneer branchless banking in Pakistan with Easypaisa in 2009, transforming banking by enabling digital payments across the country.

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Nadeem Ashfaq, Head of Infrastructure, TMB/Easypaisa



Always-on availability needed to win customers

Pakistan is predominantly a cash society. According to The World Bank, the country has PKR 6.14 trillion (USD 35.6 billion) worth of currency in circulation.¹ Due to low financial literacy, most people are uncomfortable using digital financial services from financial technology companies, with few incentives to switch to digital payments.

To convince consumers to use digital financial services, which can improve financial inclusion, TMB carried out extensive awareness campaigns to educate the public on the benefits of using Easypaisa, which include transferring money, ordering a debit card or paying utility bills on their phone.

“Some of the IT challenges we faced at the same time were about how do we scale our growth and get the right product mix while keeping our uptime high and our services enabled 24x7,” says Khurram Gul Agha, CIO, TMB/Easypaisa. “Our transactions hover around 110 million to 120 million a month, and we needed a way to achieve scale very quickly.”

The application footprint of each transaction is very small and used only for a short period of time, and the bank wanted to better optimize resources for these small-ticket, big-volume transactions. To stay ahead in the fast-paced financial industry, TMB needed to modernize its applications to match the pace of innovation and change.

Modernizing apps with containers

As a trusted advisor for TMB, Premier Systems continued to manage and provide support for the bank’s primary and disaster recovery sites after helping to deploy VMware vSphere, HPE Synergy, HPE 3Par Storage and Juniper Security Devices. The systems integrator knew the bank was exploring container technology and, together with the VMware local

team, recommended TMB adopt VMware vSphere with Tanzu and key offerings from the VMware Tanzu portfolio.

In May 2021, Premier Systems and VMware Professional Services deployed VMware vSphere with Tanzu, which includes Tanzu Kubernetes Grid service, to enable the bank to automate the delivery of containerized workloads and proactively manage apps in production. The team also implemented VMware Tanzu Observability by Wavefront which helped the bank to Day 2 operations by providing visibility, metrics and insights into its Kubernetes infrastructure.

“This is the first deployment of VMware vSphere with Tanzu in the financial services sector in Pakistan,” says Shah Arshad Abrar, general manager, Premier Systems. “With agile delivery powered by Kubernetes, Telenor Microfinance Bank will be able to develop new innovations and stay ahead.”

“VMware vSphere with Tanzu allows us to ship code very, very quickly, which helps product innovation. We can also add in more environments based on our development pipeline, so it gives us a lot of flexibility.”

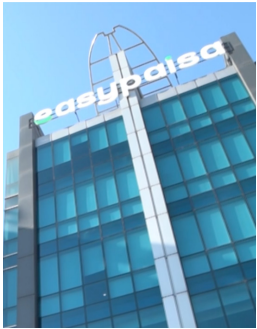
Hasan Ayaz, Head of Platform Engineering, TMB/Easypaisa

VMware NSX-T has been designed into VMware vSphere with Tanzu to provide connectivity to the Supervisor Clusters, vSphere Namespaces, and all objects that run inside the namespaces, such as vSphere Pods, VMs, and Tanzu Kubernetes clusters. To ensure security of the containers, NSX-T Data Center has been deployed to provide independent firewalls for each container, as well as offer networking, IP address management and a load balancer for microservices.

VMware Professional Services designed and deployed the solutions, with Premier Systems providing input on the architecture as well as post-deployment support.

“With their deep expertise and excellent support at every step, VMware Professional Services and Premier Systems have enabled us to adopt best practices of DevOps and transform the way we develop, test and roll out applications,” says Nadeem Ashfaq, Head of Infrastructure, TMB/Easypaisa.

1. [The World Bank, Pakistan Development Update \(2021\), Table 2.4, Monetary Aggregates.](#)



Scaling up in minutes for accelerated time to market

Now that the services and applications are on the Tanzu platform, TMB is able to scale up very quickly. Previously, it took two to three days to spin up a virtual machine to support the development team, but it now takes only a few minutes to set up a container.

Deploying fresh code into the app, which can happen a few times a day, is now very easy and manageable. “VMware vSphere with Tanzu allows us to ship code very, very quickly, which helps product innovation,” says Hasan Ayaz, Head of platform engineering, TMB/Easypaisa. “We can also add in more environments based on our development pipeline, so it gives us a lot of flexibility.”

And if there’s an issue with the code, the team can simply revert to an earlier version as it is now image based. Previously, this would have been very difficult because the team would have had to redeploy the older code on all 15 to 20 servers, which would be time consuming and possibly introduce human error.

Moreover, the autoscaler feature automatically creates new containers and ports in response to traffic spikes without any downtime. This frees engineers from manual processes such as troubleshooting the cause of the surges, adding resources to resolve the bottleneck and restarting the system.

“VMware vSphere with Tanzu has helped us to optimize the use of compute resources, so we were able to reduce compute and memory by 15 percent, which could then be repurposed for other projects,” says Ashfaq.

More importantly, the scalability and flexibility yield faster time to market, because the bank taps into a greater openness to digital financial services, spurred by new regulations and changes wrought by COVID-19.

“The number of transactions on Easypaisa has tripled since the pandemic started, and we’ve seen tremendous growth in active users. This means we need capacity to test new ideas, and Premier Systems and VMware have been very instrumental in improving our time to market for new products,” says Agha.

“At Telenor Microfinance Bank, we are driven by our mission of transforming Pakistan into a cashless and financially inclusive society, and there’s no playbook for it. But if we can change a single person’s life where he no longer has to stand in line in the heat to pay a bill, and he can do it through a financial service in seconds without leaving the comfort of his home, this is where the dream comes true, with partners like VMware and Premier Systems.”

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Combating threats and managing endpoints

With cyberattacks growing in sophistication and number, TMB wants to implement a security solution that combines intelligent system hardening and behavioral analytics to protect its endpoints, workloads and containers.

As a highly distributed organization, the bank is exploring a solution to improve security with real-time, wireless endpoint management across mobile devices, desktops and IoT devices.

“We’re definitely open to bringing our workspace security under one umbrella,” says Ashfaq. “This will ensure better integration and seamless operation throughout.”